

## **REMARKS**

Claims 1-19 and 21-35 are pending in this application, wherein claims 1-17 and 25-27 were withdrawn from consideration in a Response to Restriction Requirement filed January 6, 2006. In an Office Action mailed January 10, 2007 ("OA"), the Examiner allowed claims 18 and 21-24, rejected claims 28, 29, 33, and 35, and objected to claims 30-32 and 34 as having allowable subject matter but being dependant upon a rejected claim. In this response, Applicants amend claims 28 and 35, cancel claims 33 and 34, and add new claims 36-39. Applicants respectfully traverse the rejections and request reconsideration based on the following remarks.

In addition, Applicants do not necessarily agree with or acquiesce to the Examiner's characterization of the claims or the prior art, even if those characterizations are not addressed herein.

### **Allowable Subject Matter**

Applicants thank the Examiner for indicating that claims 18 and 21-24 are allowable over the cited prior art.

The Examiner objected to claims 30-32 and 34 as having allowable subject matter but being dependent upon rejected independent claim 28. The Examiner indicated that claims 30-32 and 34 would be allowable if rewritten in independent form to include all of the limitations of claim 28 and any intervening claims. Applicants thank the Examiner for indicating that there is allowable subject matter. Accordingly, Applicants amend claim 28 to include the allowable subject matter of objected claim 34 and the subject matter of intervening claim 33.

### **Claim Rejections - 35 U.S.C. § 103(a)**

#### **Claims 28, 29, and 35**

The Examiner rejected claims 28, 29, and 35 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,977,504 (“Wright”) in view of U.S. Patent No. 6,617,856 (“Royle”). Applicants respectfully traverse the rejection.

Applicants have amended claim 28 to include the allowable subject matter of claim 34 along with the subject matter of intervening claim 33. Accordingly, Applicants respectfully submit that claim 28 is allowable over the cited prior art.

Claim 29 depends on claim 28 and is allowable for at least the same reasons as claim 28.

Amended claim 35 is directed to a marker locator including language similar to the language amended into claim 28. Because of this similarity, Applicants respectfully submit that claim 35 is patentable over the cited prior art for at least the same reasons provided in the analysis above.

#### **Claim 33**

The Examiner rejected claim 33 under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Royle and further in view of U.S. Patent No. 6,577,238 (“Whitesmith”). Applicants cancel claim 33 hereby rendering the rejection of this claim moot. Applicants respectfully request the Examiner to withdraw the rejection.

#### **New Claims 36-39**

Applicants add new claims 36-39.

Claims 36-38 depend on claim 18, which the Examiner has allowed. Applicants respectfully submit that claims 36-38 are allowable for at least the same reasons as claim 18.

Claim 39 is directed to a marker locator including language similar to the allowed language of claim 18. Because of this similarity, Applicants respectfully submit that claim 39 is patentable over the cited prior art for at least the same reasons provided in the analysis above.

### **Conclusion**

In view of the foregoing remarks, Applicants submit that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,  
GARRETT & DUNNER, L.L.P.

Dated: May 10, 2007

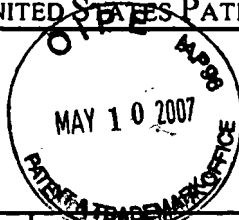
By: \_\_\_\_\_

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/590,267	10/30/2006	Johan D. Overby	9131.0020-01	6323

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EXAMINER
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WHITTINGTON, KENNETH

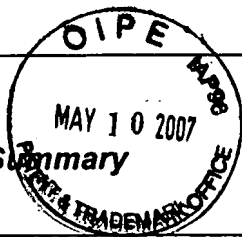
ART UNIT	PAPER NUMBER
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2862

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.



# Office Action Summary

Application No.

11/590,267

Applicant(s)

OVERBY ET AL.

Examiner

Kenneth J. Whittington

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 25-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/30/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 25-27 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 18 of copending Application No. 10/759747. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 25-27 of the present application are merely broader recitations

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of the same recited subject matter of claim 18 of the prior parent application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

6        Claim 1 is provisionally rejected on the ground of  
nonstatutory obviousness-type double patenting as being  
unpatentable over claim 18 of copending Application No.  
10/759747 in view of Wright et al. (US6977504), hereinafter  
Wright.    Regarding this claim, the claim 18 of the prior parent  
application teaches all the features of claim 1 of the present  
12 application, except for the use of a digital signal processor.  
Wright teaches using a digital signal processor to digitize  
decay signals, averaging the signals and adapting the signals  
(See Wright FIG. 5, note AD converter for processor and see col.  
8, lines 30-60). It would have been obvious at the time the  
invention was made to incorporate the digital signal processor  
18 into the claim 18 of the parent application. One having  
ordinary skill in the art would have been motivated to do so  
enhance the performance of the system (See Wright col. 8, lines  
30-36).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 112***

6           The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12           Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: what reference the transmitter is phase shifted. Claim 1 merely requires the transmitter signal is phase shifted to substantially zero.

18           However, it is unclear as what this means. Shifting in this context means the phase of the signal is moved forward or backward along or in comparison to a reference signal or position. Accordingly, shifted as recited in this claim does not make sense and is thus unclear. As noted in the specification, the phase of the marker transmit signal is phase

24           shifted to provide a delay phase of substantially zero at the end of the electromagnetic pulse (See also FIG. 5 of the present



application). Without any reference signal with respect to the phase of the marker transmit signal, the claim is unclear what or where the phase is shifted to "zero" or just where this zero is located.

For purposes of examination, the claims will be interpreted to not have this indefinite language, i.e., relating the to any phase shifting.

As a matter of suggestion and as outlined in the specification, amending this phrase such that "the marker transmit signal is phase shifted to provide a delay phase of substantially zero at the end of an electromagnetic pulse" would overcome this 112 rejection and the prior art rejections of claims 1-5 noted below.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United

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States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Wright. Regarding these claims, as

6 interpreted in view of the 112 rejection above, Wright discloses a marker locator, comprising:

at least one transmitter channel coupled to provide a transmitter signal to an electromagnetic field generator (See Wright FIG. 2, item 202);

12 at least one receiver channel coupled to receive time decay signals from an electromagnetic field detector (See FIG. 2, item 204); and

a digital processor coupled to provide digitized transmitter output signals to the at least one transmitter channel and to receive digitized time decay signals from the at least one receiver channel, wherein the digital processor  
18 receives the digitized time decay signals from the at least one receiver channel in the time interval between pulses of application of digitized transmitter output signals to the at least one transmitter channel, the digital processing system averaging the digitized time decay signals received from the at least one receiver channel (See col. 8, line 28 to col. 12, line  
24 57).

Regarding claim 2, Wright discloses the pulse includes a first period where transmission of the transmitter signal from the electromagnetic field generator occurs and a second period where the time decay signal can be received (See col. 9, lines 4-27).

6        Regarding claim 4, Wright discloses the electromagnetic field generator and the electromagnetic field detector are an antenna (See col. 3, line 59 to col. 7, line 47), and

the at least one transmitter channel includes a transmit switch and the at least one receiver channel includes a receive switch, the transmit switch and the receive switch being  
12 controlled by the digital processor such that the at least one receiver channel does not receive the time decay signals while the at least one transmitter channel is coupled to the antenna and the at least one transmitter channel does not transmit the transmitter signal when the at least one receiver channel is coupled to the antenna (See col. 9, lines 17-27).

18

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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6 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Govari et al. (US6498477), hereinafter Govari. Regarding this claim, Wright teaches an excitation coil arrangement, but does not explicitly teach the particular circuitry. Govari teaches a transmitter channel including a digital-to-analog converter coupled to receive a digitized transmitter output signal from the digital processor, a filter coupled to receive signals from the digital-to-analog converter, and a driver coupled to receive signals from the filter and provide the transmitter signal to the electromagnetic field generator (See Govari FIG. 2B, note the amplifier operates as both a filter and a driver). It would have been obvious at the time the invention was made to incorporate the transmitting circuit of Govari into the transmitter channel of Wright. One having ordinary skill in the art would have been motivated to do so to provide an output to the transmitting coil having appropriate amplitude and free of noise.

Claims 5 and 25-27, rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Royle et al. (US6617856), hereinafter Royle.

Regarding claim 5, Wright discloses the at least one receiver channel, but does not disclose a filter. Royle  
6 discloses a the receiver channel including a filter coupled to an analog-to-digital converter, the filter coupled to the electromagnetic field detector to receive the time decay signals and the analog-to-digital converter coupled to the digital  
12 processor to provide digitized time decay signals (See Royle col. 4, line 45 to col. 5, line 5). It would have been obvious at the time the invention was made to incorporate the filter and  
AD converter of Royle into the apparatus of Wright. One having ordinary skill in the art would have been motivated to do so to provide a circuit solution that matches bandwidth and resolution requirements while keeping cost and power within a budget (See  
col. 4, line 45 to col. 5, line 5).

18 Regarding claims 25-27, Wright teaches a marker locator comprising:

means for generating pulses of a transmit signal from a frequency, field strength, and phase from one or more markers (See Wright FIG. 2, item 202), ;

means for receiving signals from one or more markers between applications of the transmit signal (See FIG. 2, item 204);

means for averaging the received signals to form an average decay signal and means for determining the frequency, field strength, and phase of one or more markers from the average decay signal (See col. 8, line 28 to col. 12, line 57);

wherein the means for generating pulses includes means for determining a marker transmit signal for at least one active marker; and means for generating a digital transmit signal from the marker transmit signal for each of the at least one active marker (See col. 8, line 28 to col. 12, line 57); and

the means for determining the marker transmit signal includes a means for adjusting a power of the marker transmit signal for each of the at least one active marker (See col. 8, line 28 to col. 12, line 57, note that there would be some portion of the system to monitor or adjust power).

However, Wright does not explicitly teach the marker representing different types of utilities. Royle teaches that markers can be associated with various utilities (See Royle col. 1, lines 43-51). It would have been obvious at the time the invention was made to incorporate the markers of Wright into various utilities as noted by Royle. One having ordinary skill


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in art would have been motivated to do so as because as noted in Wright, its disclosed apparatus can be used in other systems (See Wright col. 25, lines 21-62), and applying the markers to such utilities will aid in determining the location of such utilities in a medium for marking such utilities for excavation  
6 or repair.


**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Whittington whose telephone number is (571) 272-2264. The  
12 examiner can normally be reached on Monday-Friday, 7:30am-4:00pm.

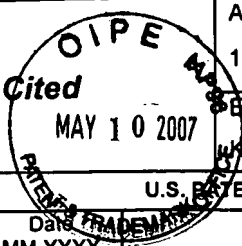
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is  
18 571-273-8300.

  
Kenneth J Whittington  
Examiner  
Art Unit 2862

kjw

  
EDWARD LEFKOWITZ  
SUPERVISORY PATENT EXAMINER  
TECHNICAL STAFF

# Notice of References Cited



Application/Control No.

11/590,267

Applicant(s)/Patent Under  
Reexamination  
OVERBY ET AL.

Examiner

Kenneth J. Whittington

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## U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,498,477	12-2002	Govari et al.	324/207.12
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

## FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

## NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.